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ON THE CAUSE OF VICE-PRESIDENT WILSON'S DEATH.¹

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THE following report of the post-mortem examination of the body of the late vice-president was printed in a Washington newspaper, and sent to me by my friend Col. J. H. Baxter, M. D., Chief Medical Purveyor of the United States Army. It may therefore be regarded as having been published by authority, and as being a correct account of the proceedings and opinions of the medical gentlemen who conducted the investigation. It is the same statement that was telegraphed to the principal newspapers throughout the country, and laid by them before their readers: —

“ External appearances: Nothing unusual.

“ Brain: Weight, forty-nine ounces; sinuses of brain full of black fluid blood; deposit of lymph on surface of cerebral hemispheres; consistence and color of brain normal; cyst the size of a pea in each choroid plexus; atheromatous deposit in the arteries at base of brain, and in anterior and middle cerebral arteries.

“ Spinal cord: Nothing abnormal in color or consistence. A microscopical examination will be made hereafter.

“ Lungs: Old pleuritic adhesions on left side; calcareous deposit the size of a pea in the middle lobe of right lung; lungs congested (hypostasis).

“ Heart: Normal, except small calcareous deposit in aortic valve; pericardial fluid normal.

“ Stomach: Empty, congested throughout, with slight erosions or abrasions at several points; pyloric portion normal.

“ Liver: Congested and somewhat fatty; small cyst on upper surface.

“ Gall-bladder: Full of bile; normal.

“ Kidneys: Weight, eight ounces each; congested, with one or two small cysts, and cicatrices of similar cysts.

¹ Read before the New York Neurological Society, December 6, 1875.

"Spleen : Large, dark ; otherwise normal.

"Other viscera : Normal.

"Cause of death : Apoplexy."

The use of the term apoplexy in the foregoing report is unfortunate and inexact. Apoplexy is a symptom, just as cough is a symptom. It would be just as definite to say that a patient affected with some organic disease of the chest had died of cough, as to assert that the vice-president died of apoplexy.

Nevertheless, apoplexy is, as I have said, a symptom. It may result from several conditions. The object of this paper is to show that the vice-president did not die from any disease of the brain capable of producing apoplexy, and, to go still further, that his death was not the direct result of any cerebral lesion at all, unless it was of the medulla oblongata.

Apoplexy is defined by Aitken¹ as being essentially characterized by the sudden loss, more or less complete, of volition, perception, sensation, and motion, depending on sudden pressure upon the brain (the tissue of which may be morbid) originating within the cranium. Though it may be due to several very different conditions, Aitken states that it is customary to confine the application of the term to congestion or hæmorrhage, to which may be added serous effusion. It is still more common to use apoplexy and cerebral hæmorrhage as correlative terms.

Now when we come to analyze the report, we find that the following circumstances are stated to have existed, which may be regarded as more or less morbid conditions of the brain.

(1.) The sinuses were full of black fluid blood.

(2.) There was a deposit of lymph on the surface of the cerebral hemispheres.

(3.) There was a cyst the size of a pea in each choroid plexus.

(4.) There was an atheromatous deposit in the arteries at the base of the brain and in the anterior and middle cerebral arteries.

The normal phenomena were, —

(1.) The weight of the brain was forty-nine ounces.

(2.) The consistence and color of the brain were normal.

Surely no one acquainted with cerebral pathology will assert that any one of the circumstances embraced in the first category could have caused the symptom known as apoplexy, much less have produced the death of the distinguished patient. There is no mention made of a clot, or an embolus, or a thrombus. On the contrary, it is distinctly stated that the color and consistence of the brain were normal, which could not have been the case had any of these conditions existed for any considerable length of time. A thrombus or an embolus might, however, if it occupied either of the vessels supplying the medulla oblongata, have caused sudden death without producing softening.

¹ *The Science and Practice of Medicine.* Third American Edition, 1872, i. 1021.

No mention is made of any lesion existing in the corpora striata or optic thalamus, nor of the remains of any anterior hæmorrhage. It is probable, therefore, that the hemiplegia caused over a year ago was not due to the rupture of a vessel.

We may therefore, I think, dismiss all idea of cerebral hæmorrhage, and, indeed, the symptoms are not reconcilable with such a condition, unless, as is not probable in view of the competency of the medical gentlemen who conducted the examination, and who would certainly have detected such a lesion, the extravasation took place into the substance of the medulla oblongata, or was so situated, or was of such enormous size, as to subject this organ to great pressure.

In the same newspaper (*The National Republican*) which contained the report of the post-mortem examination, we find an account of the manner of the vice-president's death, which is substantially identical with that contained in the other papers. The evening before, he drank a large glass of ice-water, and "on Mr. Wood's remarking that it was something unusual for him to drink so much, the vice-president replied that he did not feel as well as usual, and asked Mr. Wood to place his ear to his heart, but nothing was detected out of the usual course. Mr. Wilson retired, and was soon asleep again. At two o'clock Lieutenant Boyden relieved Mr. Wood, and remained with Mr. Wilson until seven in the morning. Soon after Lieutenant Boyden had left, Mr. Wilson awoke, an unusual thing for him to do, and seemed quite bright and cheerful. It was the first time since his sickness that he had waked at that hour. At 7.05 he was informed of the death of Senator Ferry. He exhibited no excitement, but seemed lost in deep thought, and presently spoke of Mr. Ferry in a very friendly manner. Mr. Wood then washed his face and prepared him for breakfast, and he drank a glass of bitter water (prepared by Dr. Baxter), and as Mr. Wood turned to place the glass on the table Mr. Wilson lay down again, and the moment his head touched the pillow his breathing became difficult, and in less than a minute he was dead."

Now it is quite common with those not thoroughly conversant with the physiology of the brain and the pathology of cerebral hæmorrhage to consider the affection in question as frequently the cause of sudden death. Such, however, is really not the case, for unless the medulla oblongata be involved in the lesion, dying from extravasation of blood in the brain is quite a protracted process. Thus Dr. Hughlings Jackson,¹ though admitting that hæmorrhage into or near the medulla oblongata might cause instant death, has never witnessed such a termination. Dr. Wilks² says that apoplexy is very rarely, if ever, a suddenly fatal disease,

¹ On Apoplexy and Cerebral Hæmorrhage. Reynolds's System of Medicine, London, 1866, ii. 520.

² Guy's Hospital Reports, 1866, page 178.

no matter what part of the brain may be the seat of the lesion. Among the reports of several thousand post-mortem examinations at Guy's Hospital of individuals who had died apoplectic, there was but one in which death was asserted to have been instantaneous, and that was a case of meningeal hæmorrhage. Even this was doubtful, for the patient had fallen at some distance from the hospital, and was dead when brought in.

In my own experience I have never seen a case of cerebral hæmorrhage that was instantaneously fatal. I have several times had cases under my observation in which it was said death had been as sudden as though the individual had been struck by lightning; but careful inquiry and post-mortem examination have shown either that the observers were deceived or that there had been no extravasation at all, death being the result of heart-disease.

But it is certainly true that a hæmorrhage into the medulla oblongata may cause sudden death, though even here such a result is not inevitable. After extensive search I have been able to find but two cases.

Gintrac¹ cites the case of a woman sixty-four years old, who, during a violent fit of anger, uttered a loud cry, supported herself against a wall, and dropped slowly to the ground. When taken up she was dead. The sinuses of the dura mater were found engorged, the vessels of the pia mater were injected, the ventricles were empty. A clot the size of a walnut was found adherent to the superior part of the medulla oblongata, and extending as high up as the fourth ventricle. It originated from the central gray matter of the bulb, and had partly destroyed the olivary bodies.

The other case is reported by Dr. Charrier.²

A woman left her bed the tenth day after childbirth. On the twelfth day, at the evening visit of the physician, she answered the questions he put to her. She appeared to be in good spirits, when suddenly she uttered a cry, turned over on her pillow, and was dead, without there having been any convulsive movement. The diagnosis of hæmorrhage into the bulb was made.

The calvarium was removed, and the medulla oblongata was exposed to view. In appearance there was no lesion, but on incising the rachidian bulb a clot was found occupying its substance, to which the death was undoubtedly due. All the other parts of the brain were healthy, as were also the thoracic and abdominal viscera.

In the published report of the post-mortem examination of the body of the vice-president, no mention is made of the medulla oblongata. It is therefore to be presumed that no lesion existed in this nerve-centre. It is stated that there was nothing abnormal in the color or consistence of the spinal cord, but that a microscopical examination will be made of

¹ *Traité théorique et pratique des Maladies de l'Appareil nerveux*, ii. 372.

² *Hémorrhagie du Bulbe rachidien. Archives de Physiologie*, 1869, page 660.

it. Such an investigation, if made to embrace the medulla oblongata, may reveal the cause of the vice-president's death, but it certainly is not needed for the discovery of an extravasation of blood sufficient to have produced such a sudden death as was his.

The vice-president first consulted me, at the instance of my friend Dr. E. H. Clarke, of Boston, on the 4th of September of the present year. He then complained of pain in the back of his head, and of inability to sleep. He had almost entirely recovered from the hemiplegia which had occurred the year before, but there was at times a little thickness of speech, especially when he was fatigued. His face was flushed, and there was occasional numbness of various parts of the body.

Although his sight was not markedly affected, there was incipient double optic neuritis, the morbid process being more advanced in the right than in the left eye.

Conceiving the symptoms for which he consulted me to be mainly due to cerebral hyperæmia, I treated him with the bromide of sodium and the fluid extract of ergot, in doses of fifteen grains of the former to half a drachm of the latter, three times a day. At the same time I enjoined rest from mental labor, an injunction, however, which he declared he could not comply with as fully as was desirable.

I saw him again on the 15th of October. He was better, he said, than he had been for a year, was sleeping well, had no pain or weakness, and was in full mental vigor. Being constipated he asked me for a mild purgative, and I gave him a prescription for some pills of ox gall, extract of aloes, and podophyllin, telling him to take one when necessary.

He did not visit me again till the 7th of November. He was then worse than I had yet seen him. There were vertigo, thickness of speech, twitching of the facial muscles, irregularity of respiration and of the action of the heart, slight difficulty of swallowing, and intense pain in the back of the head and nape of the neck. At the same time there was a peculiar restlessness of manner which was very striking. His hands were in almost constant motion and he could not sit longer than a few seconds without rising and pacing the floor, or changing to another chair. He spoke of his inability to sleep and of his waking with a sudden start several times in the course of the night.

Ophthalmoscopic examination showed no condition different from that which existed previously.

There was neither albumen nor tube casts in the urine.

There were no abnormal sounds about the heart, but the impulse was feeble and irregular both in rhythm and in force. Twice, while I felt his pulse, there was an intermission. I could detect no evidence of organic disease of any kind.

The temperature of the right side of his body, head, face, and hands, as determined by Dr. Lombard's thermo-electric differential calorimeter was a degree and a half Fahrenheit higher than that of the left side.

The symptoms led me to apprehend the existence of incipient basilar meningitis, extending as far back as the medulla oblongata, or some other congestive or inflammatory affection, in its very beginning involving this organ.

I therefore advised the continuance of the bromide of sodium and ergot, which had been omitted since his last visit, and at the same time gave him small doses ($\frac{1}{10}$ gr.) of the phosphide of zinc.

I also advised the application of the actual cautery to the nape of the neck, and I applied it, first producing local anæsthesia by means of the ether spray.

I never saw the vice-president again. Contrary to my advice he went to Washington. I knew he would overwork himself there, but he never heeded any remonstrances against his excessive mental exertion.

That evening he went to Washington, first sending me word that he felt greatly relieved and that he would not work hard. He subsequently said to a friend that "after undergoing this treatment and recovering from the anæsthetics previously applied he felt stronger and better, and he thought he would at least be able to preside at the opening of the Senate, and perhaps through most of the session. He observed in this connection that he had a long struggle with intense agony in his spine before he yielded; that he thought he had brought every power of endurance to bear; that no one could ever imagine the suffering he had battled against, and he had yielded only when utterly exhausted; that he was so entirely prostrated that he did not think it possible to revive. He said that at no time was he without a clear perception of what was going on; that the only striking sensation he had, independent of his suffering, was that of excessive fatigue. He said that he had accounted for that in the exertion he was compelled to make to preserve the mastery of his will over his physical sufferings. He said that if this should yield he would lose his reason, as the agony he endured was beyond expression."¹

The day after his arrival in Washington, Mr. Wilson, after over-exertion both mental and physical, took a hot bath, and was soon afterward completely prostrated. The phenomena were not those of cerebral hæmorrhage or of general cerebral congestion. The chief symptoms were pain in the back of the neck, and syncope. He was attended by Dr. J. H. Baxter, of the army, who, recognizing the features of the case, administered whiskey by hypodermic injections. Under date of November 12th, he wrote me, "You would have been pleased to see the effect of the half drachm of whiskey administered under the skin. Reaction began within three minutes, pulse became strong, extremities warm, and surface circulation good."

¹ Special dispatch to the Boston Journal, dated Washington, November 23, 1875.

I had written to Dr. Baxter, giving him my views relative to Mr. Wilson's case and stating that I was glad to find that he had formed a like opinion. In the letter from which the foregoing quotation is made he says, —

"I am glad that you have the same opinion in regard to his trouble that I have, for I was correctly reported. The only point in which we may differ is this: that I am inclined to think that the spinal difficulty is reflex, and depending on irritation of digestive tube, although I am by no means ready to assert that there is not organic disease in that particular point in spinal marrow [the medulla oblongata] or membranes."

I think, taking into consideration the history of the case, the phenomena of the attack two weeks before his death, the circumstances of his death, and the report of the post-mortem examination, that unless there was a hæmorrhage into the medulla oblongata there was none anywhere else within the cranium. In regard to this latter point the published report of the post mortem affords no evidence one way or the other.

My opinion is that the immediate cause of the vice-president's death was the sudden cessation of the processes of respiration and circulation from paralysis of the pneumogastric nerves; and that this paralysis was due to disease of the medulla oblongata affecting the nuclei of the pneumogastrics.

I do not suppose this disease to have been of long duration. Probably it began its development just before he came to see me the last time, November 7th. It is not, therefore, probable that the affection was of the nature of a slow inflammatory process, such as that causing glosso-labio-laryngeal paralysis. Moreover, the symptoms are not for a moment to be ascribed to any such disease.

But I think it probable that there was disease of the vertebral and basilar arteries, such for instance as was discovered in the anterior and middle cerebral, and the other arteries of the base of the brain. I am further of the opinion that the attack which the vice-president had two weeks before his death was due to a clot, probably a thrombus of one of the vertebral arteries, and that the attack which resulted in his death was produced by embolism, or more probably thrombosis, of either the other vertebral or the basilar.

The symptoms of each seizure are entirely reconcilable with this hypothesis, and they do not accord with the idea of the existence of any other intra-cranial disease not involving the medulla oblongata, and as we have seen there is no evidence going to show that there was any gross lesion of this organ.

We know that injury of the nuclei of the pneumogastrics is followed by instant death. Experimental physiology teaches us this, even if

there were no other evidence; and, as we have seen, hæmorrhage into the substance of the bulb may cause the immediate extinction of life.

But this is not all. The fact that closure of the basilar or vertebral arteries by a clot will cause sudden death is shown by several cases which have been reported, and by the anatomical and pathological studies of those who have devoted themselves to the elucidation of the subject.

Thus Martineau¹ reports a case which, though differing in several respects from that of the vice-president, presents, nevertheless, some analogous features.

A man, sixty-two years of age, died suddenly. Seven years before, he had suffered a sudden loss of speech, impossibility of walking, and vertigo without vomiting. These symptoms lasted an hour and then disappeared, and the patient entirely recovered. On the 6th of April, 1865, while in the midst of his work, he was seized with headache, embarrassment of articulation, and numbness of the left side of the body. On the morning of the 7th all these symptoms had disappeared. On the 10th there were vertigo and vomiting; on the 25th, sudden death. The post-mortem examination revealed the existence of a thrombus occupying both vertebral arteries at the point where they unite to form the basilar. The substance of the brain was healthy, but all the arteries of the base were in a state of atheromatous degeneration.

In this case the phenomena observed in the attacks which took place before that which caused death were probably due to the closure of the vertebrals, and the fatal result, to the obliteration of the basilar artery by the extension upwards of the clot.

The general similitude existing between this case and that of the vice-president causes us to regret that the vertebral arteries were not examined in the course of the post-mortem investigation into the cause of death.

Hayem² has called attention to thrombosis of the basilar artery as a cause of sudden death, and in citing Martineau's case gives an explanation of the rapidity with which it ran its course, similar to that above proposed.

Duret, who has so well studied the cerebral circulation, has also investigated with much thoroughness the arterial system of the medulla oblongata.³ The pathological deductions which he draws therefrom are as follows:—

“(1.) When a clot is situated in one of the vertebral arteries it interrupts the circulation in the anterior spinal artery, and consequently in the median arteries which arise from it; that is to say, in the arteries

¹ Observation de Thrombose des deux Artères vertébrales. Bulletin de la Société médico-chirurgicale, 1865.

² Sur la Thrombose par Artérite du Tronc basilaire comme Cause de Mort rapide. Archives de Physiologie, 1868, page 270.

³ Sur la Distribution des Artères nourricières du Bulbe rachidien. Archives de Physiologie, 1873, page 97.

which supply the nucleus of the spinal accessory, the hypoglossal and the inferior root of the facial. It therefore causes the development of the symptoms of glosso-labio laryngeal paralysis.

"(2.) When the clot occupies the inferior part of the basilar trunk, it cuts off the food from the sub-protuberantial branches which supply the nucleus of the pneumogastric, and sudden or at least rapid death is the consequence."

If, however, after careful examination, no clot was found in either the basilar or the vertebral arteries, the only other possible intra-cranial lesion which in my opinion could have caused the sudden non-convulsive death of the vice-president is the plugging of one or more of the minute vessels or capillaries of the nucleus of the pneumogastric, by a calcareous embolus derived from some one of the diseased arteries of the brain. It is possible that deposits of calcareous matter may have existed in the vertebral and basilar arteries, and that one or more of these might have become detached and have constituted the embolus.

The reasons for considering the fatal termination to be the result of a lesion of the medulla oblongata are not, however, limited to pathological conditions. The phenomena observed by me on the occasion of his last visit, the thickness of speech, difficulty of swallowing, twitching of the muscles of the face, irregularity of respiration and of the action of the heart, and intense pain in the back of the head, all point to trouble in this organ, and the peculiar manner of the death renders it almost certain that this was the part in which the essential lesion resided.

Whether or not, however, any one of the theories I have advanced be correct, it is quite evident that the vice-president did not die of apoplexy, and it is mainly to aid in restricting the use of this term within proper limits, that I have felt it right to bring the subject to the attention of the Neurological Society.

Since finishing the foregoing paper I have received from my friend, Dr. Baxter, the full report of the post-mortem examination. I had written to him stating my belief that Mr. Wilson did not die of apoplexy in the ordinary sense of that word, and that unless there was a lesion of the medulla oblongata death must have been due to heart-disease.

I subjoin the full report, prefacing it with Dr. Baxter's letter of transmission, which, though not intended for publication, is interesting inasmuch as it raises a new question for consideration:—

"DEAR DOCTOR, — I have delayed answering your letter that I might be able to give you the result of the microscopical examination of the spinal cord in Mr. Wilson's case. But as that will not be completed for two or three days, I send you the post-mortem examination, and will give you the microscopical result as soon as I can.

"There was no clot, and no discoverable cause of sudden death to be found in the brain. The heart was all right.

"Could his death have been caused by reflex action of stomach through pneumogastric nerve? He drank a glass of the German bitter water which he usually took in the morning to move his bowels, lay back in bed and breathed stertorously about twelve times, and died.

"I think the condition found of his stomach warranted my diagnosis that his recent attack depended on irritation of that organ. You may be sure there was not enough organic trouble about the heart to cause death. Truly your friend, J. H. BAXTER.

"WILHAM A. HAMMOND, M. D., New York."

"Autopsy, November 22, 1875, on the body of Henry Wilson, Vice-President of the United States, about four hours after death.

"There was no rigor mortis and no other external appearance of note except a longitudinal livid patch upon the back of the neck.

"The dura mater was quite firmly adherent to the inner surface of the calvarium adjacent to the longitudinal sinus; all of the sinuses were full of dark fluid blood; the pia mater was congested and presented many small, old, whitish patches of lymph scattered along the surfaces adjoining the longitudinal sinus.

"The brain weighed forty-nine ounces, was normal in consistence, and its color normal except that the puncta vasculosa were less marked than usual, both in number and in vividness; there was a transparent cyst about the size of a pea in the extremity of each choroid plexus; the ventricular fluid was normal in character and quality.

"The subarachnoidal fluid was slightly increased in quantity. The arteries at the base of the brain, more especially the middle cerebrals and basilar, together with their larger ramifications, were notably atheromatous, some of the calcareous plates being three or four lines in long diameter and so thick as nearly to obliterate the vessel.

"No thrombus or embolus was found, nor any extravasation of blood in the substance of the brain, pons Varolii, or medulla.

"The venous plexuses of the spinal canal contained a large quantity of dark fluid blood.

"The spinal cord, which was examined as low down as the third dorsal vertebra, appeared to be normal, except that the demarkation between the gray and the white substance was not well marked. Portions of the brain and spinal cord were set aside for microscopical examination.

"The lungs were congested posteriorly; there were old pleuritic adhesions on the left side, chiefly around the apex; a calcareous deposit the size of a pea was found in the middle lobe of the right lung; the lungs were otherwise normal.

"The heart presented a small calcareous deposit on one of the segments of the aortic valve, but was otherwise normal.

"The pericardial fluid was normal in quantity and color.

"The stomach was much congested, the mucous membrane everywhere of a deep red color and covered with mucus.

"There were many erosions of the mucous membrane, some superficial, others nearly perforating the membrane; some, the smaller ones, were rounded, the larger were irregular in outline; these latter were surrounded by dark areolæ of congestion.

"The liver was of a dark color, congested, and somewhat friable; there was a small aqueous cyst in its upper surface near the broad ligament. The gall-bladder was full of dark bile. The spleen was large and dark, but normal in structure. The kidneys weighed eight ounces each, and were congested; there were a few small subcapsular cysts and cicatrices, apparently of previous cysts.

"The bladder was contracted, its mucous membrane slightly reddened, and contained a small quantity of urine of normal color.

"The intestines appeared healthy. It perhaps ought to be stated that in view of the prospective embalming, only such examination was made as appeared to be absolutely necessary.

"The cause of death was considered to be nervous apoplexy, depending probably on cerebral anæmia."

Now the points to which I specially desire to call attention in connection with this report are the following: —

First. The fact that the arteries at the base of the brain, especially the middle cerebral and basilar, together with their larger ramifications, were notably atheromatous, some of the calcareous plates being three or four lines in long diameter, and so thick as nearly to obliterate the vessel. This statement is directly confirmatory of the theory I have advanced that some of the smaller vessels of the medulla oblongata might have been entirely closed by calcareous deposits.

Second. The fact that no thrombus or embolus was found, nor any extravasation of blood in the substance of the brain, pons Varolii, or medulla. It does not appear, however, that the vertebrals were examined.

Third. The condition of the stomach is, I think, the strongest point yet advanced in favor of a lesion of the medulla oblongata. I cannot, therefore, coincide with my friend Dr. Baxter in regarding it as the exciting cause of death, or of the attack of two weeks before.

Pincus, according to Schiff,¹ has seen congestions, black and irregular spots, and hæmorrhages produced in the mucous membrane of the stomach of rabbits by section of the sub-diaphragmatic branches of the pneumogastric nerves.

¹ *Leçons sur la Physiologie de la Digestion*, ii. 433.

Vulpian,¹ in speaking of the erosions, hæmorrhages, and other disorganizations of the gastric mucous membrane produced in animals by lesions of the crura cerebri, corpora striata, and optic thalami, calls attention to the fact that like changes are caused in the stomach of man by cerebral hæmorrhages, and says, —

“M. Charcot and I have observed these ecchymotic lesions in the stomach in cases of *ramollissement*, and even in cases of arterial ischæmia when *ramollissement* had not yet been produced. I have found them twenty-four hours after the obliteration of the middle cerebral artery. The patient had lost consciousness and had died without reviving. At the autopsy, although there was no cerebral softening, numerous ecchymotic spots were found in the stomach.”

He then adds that even in the lower animals they may be caused by injury of other parts of the brain than the crura, the corpora striata, or the optic thalami, and that Schiff has observed them to follow lesions of the medulla oblongata, and of the spinal cord between the first and second vertebræ.

As to the hypothesis advanced by Dr. Baxter, while I do not think it tenable under the circumstances, there is no doubt that sudden death may be produced by reflex vaso-motor spasms starting from the stomach. To this category of circumstances belong the cases of sudden death ensuing from the ingestion of cold water into the stomach while the body is undergoing cooling after being greatly overheated. Guérard² has adduced several examples of the kind, and the fact is familiar to us all from instances which have occurred within our personal knowledge. Such cases are to be explained upon the theory that the influence is propagated to the medulla oblongata, and there acts by producing immediate anæmia of that small mass of gray matter which constitutes the nib of the calamus scriptorius, and the perfect integrity of which is essential to life. The functions of the pneumogastric nerves are at once arrested, and respiration and circulation instantaneously stopped.

This concludes what I have to say in regard to the very interesting questions suggested by the lamented death of the vice-president, though it is evident that the subject is by no means exhausted.

RECENT PROGRESS IN SURGERY.

BY J. COLLINS WARREN, M. D.

Antiseptic Surgery. — The demonstrations of Professor Lister to the members of the British Medical Association at the meeting at Edinburgh last summer, and the address of Mr. Spence delivered at the

¹ Leçons sur l'Appareil vaso-moteur. Paris, 1875, i. 451.

² Annales d'Hygiène, xxix. 1843.

same time, the former showing the brilliant effects of his method of treating wounds, and the latter giving equally satisfactory results with the simplest dressings, have given rise to renewed discussion as to the merits of the antiseptic treatment. Since attention was last called to this subject in the JOURNAL, the advocates of Lister's views have greatly enlarged their experience; they have also gained many converts to the cause, and we have now, in addition to the testimony of British surgeons, that of many Continental surgeons, chiefly German, who have for the last year or two studiously carried out the minutest details of the system as laid down by its originator, and have recently given the fruit of their labors to the public.

Time also has shown some of its shortcomings, and as the literature of the day is teeming with testimony both for and against this mode of treatment, it is proposed to give a brief sketch of the discussion in its present stage.

The principle upon which the entire system is based is thus given in the words of Lister himself: "Putrefaction under atmospheric influence, as it occurs in surgical practice, is due to particles of dust ever present in the atmosphere that surrounds our patients, and endowed with wonderful chemical energy and power of self-propagation, yet happily readily deprived of energy by various agents which may be employed for the purpose without inflicting serious injury upon the human tissues." To deprive these particles of their energy has been the object of a complicated dressing, which, since its first adoption, has undergone various modifications. The latest of these, and the one now in use, is the antiseptic gauze dressing, "which contains in its fibres carbolic acid stored up in common resin, is to be applied in eight layers, with a sheet of some trustworthy impermeable tissue placed beneath the outermost layer to prevent the discharge from soaking directly through the dressing, for if it did so a copious effusion might wash out the antiseptic from the part immediately on the wound and putrefy within twenty-four hours. The most durable and therefore most reliable material for the purpose, consistent with the requisite lightness, is a fine cotton cloth with a thin layer of caoutchouc on one side, known in the shops as hat lining, or thinnest mackintosh."¹ Another change worthy of note in the system is the use of a large steam spray-producer during operations. The details of the method, both in conducting an operation and in applying the subsequent dressings, can be found in most recent editions of works on surgery. The very latest improvements, however, are to be found in an article by Lister in *The Lancet* for March 13, 1875; also in an able review of the whole subject in the *British and Foreign Medico-Chirurgical Review* for October, 1875.

Carbolic acid is still the favorite agent of Lister, although he has ex-

¹ Heath's Minor Surgery, fifth Edition.

perimented with a variety of other drugs. Chloride of zinc, which was formerly used, in solution of a strength of forty grains to the ounce of water, as an application to disinfect wounds already putrid, has been found to cause sloughing if used incautiously, and has been abandoned. Boracic or boric acid, a knowledge of which was obtained from Dr. Stang, of Norway, has proved to be a valuable antiseptic agent. Lint is dipped in a saturated solution of the acid at or near the boiling point, and is allowed to dry, when the crystals are deposited in it. This makes a soft and agreeable dressing, and one which will act antiseptically for a considerable time. An account of the method of using this acid may be found in the *Edinburgh Medical Journal* for September, 1874.

Salicylic acid is used exclusively by Professor Tiersch, in place of carbolic acid. His testimony, however, does not agree with that of Lister, who finds it useful only when the dressing is to remain on a long time, say a week, or of Mr. Callender, whose experiments with the drug are alluded to in a recent number of the *Medical Press and Circular*. Mr. Callender's treatment, it should be said, was not strictly antiseptic. He says, —

“The acid was used in various ways, and the three following preparations were the ones chiefly employed: (a.) Phosphate of soda, three parts; salicylic acid, one part; water, fifty parts. (b.) Salicylic acid, one part; olive oil, forty-nine parts. (c.) Salicylic acid, one part; bicarbonate of soda, half a part; water, one hundred parts. In addition to these, however, it was occasionally used combined with borax, or in the form of an ointment with prepared lard. I found that salicylic acid was free from odor, and so far was acceptable to the patients; that wounds healed under its influence, and, during the progress of the repair, were free from bad smells; that, unless strong with spirit, or but little diluted, it did not cause local pain. Its bad points seemed to be these: that, above the strength of two per cent., it caused local irritation, with some constitutional disturbance; and, if the patient had a delicate skin, even the weak preparation was a source of trouble; that there was more discharge from a wound dressed with salicylic than there was where carbolic acid was used; that its influence upon a recent wound, as after an operation, was not so efficacious against the occurrence of decomposition as was that of carbolic acid, chloride of zinc, or of boracic acid; that the repair of a wound was less active, and the granulations, if any, were more flabby than when other simple or antiseptic dressings were employed.”

In glancing over British surgical literature we find that testimony in favor of Lister's views is not wanting in that country. Joseph Bell says of it, “I trust, however, that the cases I have mentioned will prove to the society that we are warranted in believing that in the antiseptic principle, explain it as you will, and simplify it as I hope you

may, we have a very great addition to our means of combating disease. Even if on theoretical grounds surgeons may deny the possibility of preventing suppuration, and ignore our facts, still if it be granted that by this method we can diminish the amount and destroy the fœtor of pus, we have done much to improve the sanitary condition and diminish the fatality of our great hospitals." Among the advocates of this system the names of McDonnell, Annandale, and Cummings may be mentioned.

On the other hand, Mr. Spence, whose patients were treated in the same hospital in which Lister has employed his system, is able to show a record of sixty-five cases of major amputation with only three deaths, or about 4.5 per cent., and twenty-three cases of excision of the joints with only two deaths, or about 8.7 per cent. "The treatment consisted in thoroughly cleansing the cut surface by pouring tepid water over it, and occasionally applying tincture of iodine, alone or diluted, upon the flaps, whilst the dressing consisted merely in laying a veil of lint or thin muslin over the stumps."

This and like testimony caused many surgeons who were, we might say, fascinated by Lister's demonstrations at Edinburgh, to hesitate, nevertheless, in accepting fully his views. *The Lancet* attributes the favorable results of both parties to the increased attention given of late years to hospital hygiene, while it accounts for the enthusiasm of Continental hospital surgeons in the following way: "No one acquainted with the filthy and neglected condition of many of the Continental hospitals fifteen or twenty years ago, and even more recently than that, will be at a loss to understand why the mortality in these hospitals has so greatly diminished since the introduction of antiseptic surgery. Even the moderate use of clean water and the observance of the ordinary habits of personal cleanliness would have sufficed to reduce very considerably the frightful mortality in them."

Although there is doubtless some truth in these remarks, which are applicable in a limited degree to even some of the best German surgeons, the standing of Volkmann and Tiersch is so high, and their work so characteristic of German fidelity and accuracy, that their reports cannot fail to prove valuable contributions to the literature of this subject. Volkmann, whose *Contributions to Surgery*¹ has lately appeared, devotes a leading chapter in that handsome volume to an account of a two years' trial of the antiseptic method in the clinic at Halle. Although during this period an unusually large series of unfavorable cases presented themselves, he states, "It is my conviction that Lister's method opens the way to the solution of one of the most important problems with which surgery has to deal; to give to open wounds the protection and advantages which subcutaneous injuries possess. This

¹ Volkmann, Beiträge zur Chirurgie. Leipzig, 1875.

protection is not absolute ; no one can deny, however, that it is excessively great." He thinks that if this treatment is carried out accurately, the secretions of wounds are absolutely without odor, even if parts of considerable size become gangrenous. Decomposition of blood-clots is not only prevented, but not unfrequently the clot becomes organized in the open wound under the very eyes, so to speak, of the surgeon. A clot projecting from an open wound may remain dark red for a week, during which time granulations grow into it and destroy it ; or it may shrink after a while, and drop off like a scab. Such clots he has watched for six weeks without signs of suppuration showing themselves.

This effect upon blood-clots has not been noticed by Volkmann alone. It is one of the characteristic results of the method, which has been verified by numerous observers. Lister has pointed out that blood-clots filling an open wound will remain in situ, organize, and after a sufficient length of time will bleed if incised. Mr. Chiene reports a case to the Medico-Chirurgical Society of Edinburgh, in which he took advantage of this circumstance, and allowed an open wound on the heel to fill with coagulum, which on the sixteenth day bled when scratched, and retained its characteristic red color until on the thirtieth day epidermis began to form over it, and it healed in a few days.

Volkmann notices the absence of all local reaction in the edges of the wound. First intention becomes the rule in those cases where it was formerly the exception. The dressing greatly diminishes pain in wounds. He thinks that under circumstances when we should expect high fever, we find little or none with this treatment. At the time of his writing, eighteen months had passed without a single case of pyæmia, and erysipelas had been almost unknown. Disturbance in the healing process, which in former times was the rule, has now become with him the exception.

He describes in detail the method. Among the objections is, first, its complicated character, which prevents application with any certainty of success in some portions of the body. The action of the acid upon the hands of the operator, as also upon his instruments, if used as freely as it should be, is considered a decided objection. Moreover, carbolic poisoning is to be feared. Volkmann thinks this risk is greater than is generally supposed, and he is quite sure that in one case the death of the patient was due to the poisonous action of the drug. When he first began to use this method many cases of collapse and vomiting were noticed, due to the use of the acid, and dark-colored urine was of frequent occurrence. Small children do not bear well the external application of the carbolic dressing. The cost of the dressing seems to be very great ; Volkmann spent four thousand thalers in the year 1873 for the materials of which the dressing is composed, while an estimate made of the expense of Lister's dressings in 1874 came to six hundred pounds.

We come now to the investigations of Professor Tiersch.¹ He accepts the theory that atmospheric ferments are the cause of septicæmia, pyæmia, and hospital gangrene. Erysipelas, however, he does not think is produced by bacteria, which are to be looked upon as merely accidental accompaniments of the disease. He has tried carbolic acid with his antiseptic dressings thoroughly, but much prefers salicylic acid, which he now uses exclusively. The latter is neither volatile nor irritating, and it possesses no disagreeable odor. Its chief advantage, however, appears to be that it exercises no injurious influence upon fresh and granulating wounds if brought into direct contact with them, and has no poisonous action if absorbed into the circulation, although it may sometimes produce an olive-green coloring of the urine. At the temperature of the room three hundred parts of water take up one part of the acid; to this mixture the name salicylic water is given. This is sufficiently antiseptic to prevent decomposition, and does not irritate the part to which it is applied. The other form of dressing is called salicylic cotton. This is used of two strengths, a three per cent. and a ten per cent., the latter being colored with carmine in order to prevent mistakes. It is prepared in the following way:—

Three per cent. salicylic cotton: 750 grammes of salicylic acid are dissolved in 7500 grammes of alcohol of 0.830 sp. gr., diluted with 150 litres of water from 70° to 80° C., in which 25 kilogrammes of cotton batting, which has been freed from fatty matters, are soaked. The batting, being soaked in the solution, is then allowed to dry in a moderately warm room for twelve hours, when, evaporation taking place, the crystals are deposited in the cotton. Tiersch uses also a jute dressing prepared by three or four per cent. saturation, with the addition of twenty per cent. of glycerine to prevent the acid being given off too freely in the form of dust.

The salicylic water prevents the appearance of bacteria in the wound. The cotton dressing has remained on fourteen days without their appearance. The jute dressing is most suitable for suppurating wounds in consequence of its being able readily to absorb fluids, in which process the cotton is comparatively deficient. In operating, Tiersch takes all the precautions insisted upon by Lister. He employs the spray and carbolized catgut ligatures. He bears testimony to the absence of fever and the prevalence of first intention.

Finally we find a comparison between the open and the antiseptic treatment of wounds, by Dr. R. U. Krönlein,² compiled from cases occurring in the clinics of Zurich, Leipzig, and Halle. The results of amputations treated by the open method were found to be better than those of amputations treated by the antiseptic. The open method was

¹ Volkmann's Sammlung klinische Vorträge, 84 and 85.

² Archiv für klinische Chirurgie, xix. part 1.

also more favorable in compound fractures and in operations for the removal of the breast. Both methods, he thinks, reduce greatly the number of cases of pyæmia and septicæmia, but do not prevent the occurrence of erysipelas. The time which wounds take to heal is much shorter under antiseptic dressings than when left open. The writer complains of the expense of the antiseptic dressing and of the danger of poisoning by carbolic acid. He is unable to give preference to either mode of dressing.

In summing up the objections to the antiseptic dressing, the writer in the *Chirurgical Review* says that it is troublesome, and requires to be watched, and that the requisite minutiae are tedious. The surgeon himself must therefore do it, and not leave it to an assistant. He is rather disposed to believe, however, that it is one of the chief advantages of the system that it demands a very special individual watchfulness over each patient if it is to succeed. "But alas," he says, "not only must the patient be watched, but the most unremitting attention must be paid to every action during the period the wound is exposed to view. Is a friendly surgeon going round your ward? A touch of his finger, if unprotected by washing in carbolic acid, may ruin the case. Does an instrument fall to the ground or even lie for a second on the table? To introduce it into the wound again unless dipped, is theoretically destructive to your hopes. Is it a warm day, and are you liable to sweat? A drop falling into the wound or on the dressing will be fatal to its success. Such being the case, it is not wonderful that in the practice of many who honestly aim at following out antiseptic treatment, and believe they succeed, the results have not always been equal to expectation. . . . The surgeon cannot be expected to lug about with him a steam engine which requires twenty minutes to get up its steam, or an assistant to work a hand-spray every time he wants to dress an abscess or an ulcer. . . . Cases there are, however, which even in the purest air, and under the most wholesome conditions, will be treated more safely, rapidly, and fortunately by the adoption, in all its strictness, of the antiseptic treatment."

(To be concluded.)

GREENHOW ON ADDISON'S DISEASE.¹

THIS very complete and interesting monograph consists of three lectures delivered before the Royal College of Physicians of London, and carefully revised for publication. In the first lecture, after a short biographical notice of Dr. Addison, the author presents a clinical description of Addison's dis-

¹ On Addison's Disease: being the Croonian Lectures for 1875, delivered before the Royal College of Physicians; revised, and illustrated by Plates and Reports of Cases. By EDWARD HEADLAM GREENHOW, M. D., F. R. S., etc. Philadelphia: Lindsay and Blakiston. 1875.

case, with an account of the pathological lesion which is found in the supra-renal capsules. In the second lecture Dr. Greenhow refers to the fact that Addison's discovery has been neither generally accepted nor generally understood, and offers an explanation of the misconceptions which have prevailed in regard to the nature of the symptoms and lesions in numerous cases in which these have differed from the typical ones. In the third lecture the author's views as to the true pathology of Addison's disease are given, together with what is known of its etiology and of its treatment.

Not long after the publication of Dr. Addison's work *On the Constitutional and Local Effects of Disease of the Supra-Renal Capsules*, in 1855, cases were reported by various observers of more or less extensive disease of the capsules which were not accompanied by the peculiar symptoms described by the author, and also other cases in which the symptoms were noticed without any lesions of the capsules being found after death. Hence arose a good deal of skepticism as to any necessary relationship between disease of the capsules and the symptoms described by Addison. Dr. Greenhow undertakes to reconcile these apparent contradictions. He states, in the first place, that there is but one characteristic lesion of the supra-renal capsules which is invariably found associated with the peculiar asthenia and discoloration of the skin constituting Addison's disease, which may be briefly described as follows: the capsules are usually enlarged, hard, and nodulated; the cut surfaces present a mixture of a gray or greenish semi-transparent tissue, with a more or less friable substance of an opaque, yellow color, in roundish masses, imbedded in it, often softening down into a thick, creamy fluid. The proportions of these two substances vary, according to the more or less chronic course of the disease. Moreover, there is always found evidence of inflammation of the cellular envelope of the capsules in the form of great proliferation of their connective tissue and firm adhesions to the neighboring organs. An extensive outgrowth of dense connective tissue has also been found to invest the nerves of the supra-renal and solar plexuses, with hypertrophy of their fibrous investment, in the cases in which these nerves have been thoroughly examined. Dr. Greenhow claims that in every reported case of disease of the capsules without the symptoms of Addison's disease, which he has seen, the appearances found were quite different from the above; neither cancer, amyloid disease, fatty degeneration, apoplexy, nor tumor of the capsules will produce Addison's disease; and where such lesions were said to be found in connection with bronzed skin and other symptoms described by Dr. Addison, it is shown that the morbid appearances were really those which are associated with Addison's disease only, and not with cancer, etc. As to the alleged cases of "bronzed skin" occurring without disease of the supra-renal bodies, they are clearly instances of pityriasis versicolor, syphilis, jaundice, the effect of long exposure to the sun, or other well-known appearances, and quite different from the discoloration peculiar to Addison's disease.

It is evident that the symptoms of Addison's disease are not due to the destruction of the normal tissue of the supra-renal bodies (although such was the opinion of Addison himself when he published his work), as is shown by several cases in which these organs were supplanted by cancer, or had undergone

complete fatty degeneration, without the production of any such symptoms. On the other hand, "in many cases of Addison's disease the conversion of the supra-renal capsules into a mass of fibroid tissue, and even the degeneration of this latter into cheesy material, must have been almost if not altogether complete before the development of any of the characteristic symptoms of the disease." The true pathology of the disease, according to Dr. Greenhow, probably consists in the extension of the chronic inflammatory process from the diseased capsules to the surrounding parts, especially the numerous nerve trunks which these organs receive from the supra-renal and solar plexuses, and semilunar ganglia; sometimes these ganglia themselves are involved. It is "either as direct effects of the nerve-lesions upon certain organs, or as secondary consequences of those lesions, through the medium of their interference with the circulation," that the individual constitutional symptoms of Addison's disease seem in great part explicable. We have no space to quote the details of this hypothesis, and the answers which Dr. Greenhow offers to the objections which might be urged against it. If not wholly convincing, it is ingenious and probable, which is more than can be said of any other theory to account for the phenomena of this extraordinary disease.

Dr. Greenhow relates all that is known of the etiology of Addison's disease. It seems to have some affinity with tubercle or struma, without being of a distinctly tubercular nature. In a certain proportion of cases the inflammation has extended to the supra-renal capsules from disease or injury of the neighboring parts, especially abscess from diseased bone. In a small number of cases the disease was apparently owing to traumatic causes, or to some physical shock, strain, or blow; or to over-exertion, nervous shock, grief, great anxiety, etc.; but in a majority of cases there is no clew to the origin of the disease. A majority of the patients are males in the most active period of adult life.

The subjects of the diagnosis, prognosis, and treatment occupy the last three or four pages of the work, which, we promise the reader, will far better repay his perusal than this brief and imperfect summary of its contents would lead him to suppose. Two indexes complete the book, one containing a selection of illustrative cases, the other including the whole number of cases the author has been able to collect from all sources, methodically arranged, and containing brief references to important points. There are several colored illustrations and drawings of microscopical appearances, which are all beautifully executed.

ZIEMSEN'S CYCLOPÆDIA.¹

ANOTHER volume of this great work has appeared, and is equal in merit to its predecessors. The first part of the subject is treated of in the fourth volume, which is to follow the present one, so that we find ourselves on opening this one at once in *mediis rebus*. Pneumonia in its various forms is exhaustively treated by Juergensen. Hertz discusses a number of miscellaneous

¹ *Cyclopædia of the Practice of Medicine*. Edited by DR. H. VON ZIEMSEN. Volume V. Diseases of the Respiratory Organs. New York: Wm. Wood & Co. 1875.

pulmonary affections, as atrophy, hypertrophy, emphysema, gangrene, new growths, and parasites. Pulmonary consumption and acute miliary tuberculosis are treated of by Ruehle, and chronic and acute tuberculosis by Rindfleisch. As we have already implied, all parts of the volume are of merit, but we choose for more special notice the province of the two last named authors, on account of the various opinions that have been held on the relations of tubercle and phthisis. Rindfleisch's paper is chiefly theoretical and scientific; Ruehle's is both a scientific and a practical treatise on his large subject. Rindfleisch would greatly enlarge the domain of tubercle; in which Ruehle agrees to a certain extent. He writes as follows: "Boyle's miliary tubercle plays, however, only a subordinate rôle in pulmonary consumption; it is an accidental secondary product. When it forms the only anatomical lesion, we have to deal with an acute infectious disease, the acute miliary tuberculosis, which does not belong to phthisis. There is probably no chronic miliary tuberculosis in the old sense of the term. Phthisis is also anatomically a chronic inflammatory disease, with intercurrent simple forms of inflammation which heal by cicatrization. But the pernicious form of phthisis is a specific variety of inflammation with the characteristic caseous metamorphosis; this inflammation is localized in different parts of the tissues, is characterized by the fact that it begins with and also produces the true histological miliary tubercle of the smallest kind, and in itself undergoes no other metamorphosis except necrosis. Its limitation and local healing are effected by a simple inflammation in the surrounding parts." Felix von Niemeyer has excluded tuberculosis from the lungs except in the miliary form, and though his views cannot be said to have been proved, they have been very generally accepted. Rindfleisch, once a follower of Niemeyer, now maintains very different views. According to him, tubercle arises solely, or very nearly solely, from scrofula. As to what scrofula may be, we regret to say we know no more than before reading the book. We know, however, that it is characterized by long-enduring subacute inflammations, and the author tells us that the products of these inflammations are redeposited as tubercles; thus in pulmonary phthisis "there is first scrofula and then a cachexia from the absorption of scrofulous deposits." The lymphatics of course must play an important part, and in certain cases the swollen glands may mark the course of the disease. They acquire a great significance if Rindfleisch is right in agreeing with Schüppel that so-called scrofulous glands are always tubercular. In accordance with this view he supports the practice of extirpating such glands when possible, in order to nip the disease in the bud. By primary tuberculosis the author designates local inflammations that may be either scrofulous and tubercular or the former only; by secondary tuberculosis, the affection of the lymphatic glands; and by tertiary tuberculosis, the general attack. In spite of this nomenclature he admits that the disease in many — we are inclined to think in most — cases does not acquire a specific character till it reaches his second stage. As to the microscopic anatomy of tubercle, there are many forms that it would carry us, too far to discuss, so we will merely mention that the author believes that miliary tubercles come from the fixed cells of the vascular connective-tissue system. Pulmonary phthisis, according to Rindfleisch, usually comes from a bronchial catarrh accompanied

by the appearance of tubercles in the acini belonging to some small, inflamed bronchi. We say "accompanied," for he is precise in his statement that he has "never seen a circumscribed catarrh of the small bronchi without an initial tubercle granulum, nor an initial tubercle granulum without some catarrh," but he believes the latter to have been the primary affection. Moreover, unless the patient be scrofulous, there is little danger of subsequent tubercle, but if he be, the morbid secretion is inoculated at favorable points in the mucous membrane of the respiratory tract, among which the corners and edges at the terminations of the smallest bronchi are the most exposed. It may be questioned whether Rindfleisch's theory can be held to be better proved than that which it supersedes; so much latitude must be allowed to difference of interpretation that it is difficult to speak decidedly on the subject, but if these views be accepted, we shall not feel that we are traveling in a circle owing to their resemblance to former ones. We may look at the subject from the same direction as before, but, we think, from a nearer point, in other words, that we are slowly approaching the centre. All the praise that has been given to the translation and publishing of former volumes may be repeated for this one.

THE SANITARY CONDITION OF BOSTON.

THE death-rate of Boston in 1872 and 1873 was so high as to occasion considerable popular alarm. Men began to inquire concerning the causes of this unusual mortality and to blame now one thing and now another for it; bad sewerage, mal-administration of health affairs, the need of a public park, served in turn as plausible explanations of the reproach. At length, it was thought that something more substantial than gratuitous speculations might be had, on which to base a reasonable decision as to the hygienic condition and prospects of Boston. Accordingly, at the request of Mayor Cobb, the entire subject was submitted by the Board of Health to a commission of medical men for investigation. This commission comprised the following physicians: Dr. Charles E. Buckingham (chairman), Dr. Calvin Ellis, Dr. Richard M. Hodges, Dr. Samuel A. Green, and Dr. Thomas B. Curtis (secretary). It is unnecessary to add that the investigation could not have been intrusted to five better representatives of the medical profession in Boston.

The report of this committee is before us in the form of a well-printed pamphlet of nearly two hundred pages. It is worthy of comment that this was the first time since registration had existed in Boston when a body of physicians was officially called upon to turn to account the vast amount of statistical material collected and published year after year by the city registrar, in order that the facts therein contained might receive their proper interpretation, and that the sanitary lessons which they suggested might be shown forth for the practical benefit of the community. The report has been awaited with uncommon interest by those who had the hygienic welfare of our people at heart, and it is to be remarked that the importance of the subject treated, as well as the manner of its treatment, constitutes this pamphlet a most significant and valuable document.

The preface to the report consists of a note, signed by the four senior members of the committee, giving the credit of the work to the secretary, Dr. T. B. Curtis. "The most that we can claim," they say, "is that we have carefully reviewed and approved it." This incident is as graceful as it is rare; it reflects worthily in a double sense. It is great honor to Dr. Curtis to have prepared such a composition; it is scarcely less honorable on the part of his colleagues that they publicly disclaim any title to special commendation. Very few beside those who have entered the labyrinthine intricacies of vital statistics can appreciate the amount of difficult mental work involved in an investigation like that whose results are here presented. The ordinary reader glances at the printed tables and at the comments which accompany them, accepts or doubts or rejects, and passes on with the smallest notion of the bewildering, brain-tormenting labor requisite for the task of preparing the one or of expressing the other so as to withstand criticism as to its absolute reliability. It gives us pleasure, therefore, to express our emphatic appreciation of the committee's action in according to Dr. Curtis the authorship of a paper representing in its matter and in its method an unusual amount of studious application and of patient, painstaking, laborious research.

The report is introduced with some preliminary remarks upon the general subject of mortality statistics, their value as a measure of public health, the fallacies to which they are exposed, and the shortcomings of the prevailing methods of registration. The opinion is expressed that, notwithstanding recent views to the contrary, the general death-rate of a community is a satisfactory indication of its sanitary condition. But the death-rate should be distinguished in this respect from the mean age at death, a wholly unreliable sign of relative salubrity. The subject of the comparative mortality of the various nationalities of which the American population is made up is touched upon, and its difficulties are described with great clearness; the principal obstacle to such a study is the want of adequate data relating to the nativity and parentage of decedents, and the urgent need of supplying this want in census reports and in registration is dwelt upon.

The results of the investigation into the mortality of Boston are presented as answers to the four following questions:—

I. Is the present mortality of the city of Boston excessive; and, if so, to what extent?

II. In what portion of our community, as regards age and nationality, does the excess of mortality exist?

III. What is the nature, and what are the causes, of the diseases which occasion our excess of death? To what extent, and by what means, are these diseases preventable?

IV. What measures of sanitation are recommended?

To the first question the answer is unequivocally in the negative; we are assured that Boston is not among the most unhealthy cities of the world, as has so often been alleged in recent years. The mean death-rate for a long period is shown to be 24.5, a rate scarcely in excess of that of London, with which it is frequently compared disparagingly. Moreover, our city is not growing year by year more unhealthy, as has been thought to be the case;

her successive decennial mean death-rates maintain a remarkable uniformity. The high rates of 1872 and 1873 (30.4 and 28.5) are demonstrated to have been due to the temporary action of transient causes, namely, the coincident prevalence of small-pox, scarlatina, and cerebro-spinal meningitis; if the deaths caused by these intermittent factors of mortality were subtracted from the total number of deaths, the rate would have been very nearly that already quoted as the average for a long series of years. Or, again, if the excess of the death-rate by zymotic diseases during 1872 and 1873 were subtracted from the general death-rate for those years, the result would be similar.

But while the fact is made plain that our death-rate compares very favorably with urban rates at home and abroad, it is insisted that we ought not to rest satisfied. Our mortality from zymotic affections, which represent preventable causes of disease and death, is much too great, and calls for active and vigilant sanitary administration. Our mean death-rate is too high if it exceeds that of the country at large, or if it exceeds the normal death-rate of our city as calculated from the life-table of the United States.

The second chapter, in which is discussed the question, In what portion of our community, as regards age and nationality, does the excess of mortality exist? is an exceedingly interesting one, containing a great amount of statistical research and reasoning. The first fact demonstrated is the very great mortality which prevails in Boston among children under five years of age. It is shown that if our mortality among infants and children were as low as that obtaining in London, or even as that of the life-table of the United States, our general death-rate would be reduced from 24.5 to less than 21. To one of the methods adopted for showing our excessive infantile death-rate, that known as the *dime mortuaire*, or ratio between deaths under one year and registered births, there seems to us to be some objection, on the ground that our registration of births is not what it ought to be, since it is based on an annual canvass of the city, and therefore cannot be complete. Nevertheless, the fact that Boston suffers a disproportionate yearly loss of children is abundantly proved otherwise. During the five years 1870-74, over a quarter of all the deaths in Boston were those of children under one year of age.

In the consideration of the influence of nationality on our mortality-rate, some very suggestive results appear. It is demonstrated that the Irish swell the mortality list of the country out of all proportion to their numbers, far exceeding in this respect all the other nationalities which go to make up our heterogeneous American population. The method adopted by Dr. Curtis to make this point clear differs somewhat from that of General Walker, the superintendent of the last census, in his demonstration of the same fact. General Walker simply instituted a comparison between the different nationalities on the basis of their respective mortality-rates, general and special; Dr. Curtis makes a comparison between the population-rate and the mortality-rate of each nationality, and argues that the measure of liability to disease on the part of any nationality is found in the excess of its mortality-rate over its percentage to the whole number of foreigners. Thus, the Irish comprise 33.3 per cent. of all the foreigners in the United States, while their quota of the deaths among foreigners is 41 per cent., an excess of nearly 8 per cent.; but the Germans,

who are 30.2 per cent. of the foreign population contribute only 28.2 per cent. of the foreign decedents, no excess of comparative liability to disease and death, but the reverse. The latter method of comparison seems to us the more exact and reliable. Another significant fact is that the Irish mortality is due to the "filth" diseases (of which diarrhoea is the type), inherited and constitutional affections (consumption, cancer), and especially Bright's disease. A most marked contrast exists between the Irish and the Germans with regard to liability to the last disorder, instantly suggesting the reflection that there is also a wide difference between lager bier and corn whisky.

Now, in Boston the Irish comprise two thirds of the foreign population, and nearly a quarter of the entire people; of all the large American cities ours is the most freely supplied with this exotic element. Are we to be congratulated thereupon? Most certainly not, from the sanitary point of view, if the convincing facts presented in this report are to guide our opinions. In whatever other way the Irish affect our community, their influence on our death-rate is not salutary. They add enormously to the infant population, but they add enormously to the mortality list also; they obey the command to multiply and to people the earth, they disregard the equally authoritative behest, "wash and be clean," in all its comprehensive meanings. The work before us tells us plainly that when comparisons are made between the death-rate of Boston and that of other cities this item should not be forgotten; that there is a wide distinction between localities in themselves unwholesome and localities inhabited by unhealthy people; that we have among us more than our share of a nationality whose habits, surroundings, and hereditary tendencies promote excessive liability to physical decay and death. One bit of encouragement, however, is afforded by a foot-note in the report which declares that "the proportion of Irish in Boston is shown by the census to be steadily declining."

The third chapter considers the nature, the causes, and the prevention of the diseases which occasion excessive mortality, or, in other words, mortality in excess of the normal death-rate of the city. We are told at the outset that the deaths from diarrhoeal diseases alone nearly represent this excess; while the zymotics have together caused in the last ten years over a quarter of all the mortality. Consumption and acute pulmonary affections are included in the category of diseases which are controllable in greater or less degree by sanitary measures. The subject of infant mortality and its causes is deemed worthy of special consideration. The entire chapter is a comprehensive exposition of practical hygiene, touching those causes of death which sanitarians regard as preventable. The various diseases are studied separately, in their relation to public health and to the measures which experience has shown to be best for their prevention. This portion of the work is replete with wise counsel and useful information, the fruit of very extended research. Our space will not permit more than this summary mention of an exceedingly interesting section. We desire, however, to quote in full one sentence with our unqualified approval; at the end of the study concerning the aetiology of typhoid fever is the following: "Our final conclusion on this subject is that no measures of sanitary improvement are more strenuously needed, or are more likely to repay the cost, however great it may be, than the construction of a system of sewers adapted to our present and future needs."

The closing chapter is the one which we specially commend to the attention of our city authorities ; it considers the practical measures requisite to promote our hygienic welfare more fully, and to make our city more healthy. And first, with regard to registration as affording invaluable data for sanitary work, it is insisted that our mortuary statistics and the method of recording them are open to grave criticism, that physicians are permitted to be too careless in their certificates of death, that the nomenclature of diseases should be revised, that the city registrar should be a medical man specially fitted by virtue of his education to deal with sanitary questions, and that the registration reports should be more full and better adapted to the requirements of public hygiene. In this connection we miss one suggestion which we believe to be important, namely, that the office of registrar should be in immediate connection with the local board of health or subordinate to it ; the present independent relations of the position are anomalous and objectionable.

With regard to sanitation, very sensible counsel is given concerning the management of the eruptive fevers and the prevention of filth-infection, the latter being rightly emphasized as "the greatest and most urgent sanitary need of Boston." In connection with the matter of drainage and sewerage the report recommends that "our sanitary authorities be permanently invested with complete jurisdiction over sewage from its first starting-points within our homes, as well as throughout the entire extent of its ulterior transit ; and that they have full powers in all cases to inspect and supervise, when needful, the construction and the operation of the internal drainage arrangements of dwelling-houses." The matter of water-supply also receives attention, and a caution made by the State Board of Health is repeated, that every possible measure should be taken to prevent the pollution of Lake Cochituate by sewage.

We have dwelt somewhat at length upon this report because of the intrinsic importance of the subject, and because of the unexceptionable manner in which it has been presented by Dr. Curtis under the approval of the entire committee. The work was designed to promote the hygienic welfare of Boston, and will undoubtedly receive unusual attention, and, as we hope, be followed by satisfactory fruits, in this community ; but our more distant readers may be assured that they will find here excellent matter for their study. Especially is the publication a very useful one for health authorities everywhere, since it abounds in information and suggestions of the most sterling quality pertaining to public hygiene.

MEDICAL NOTES.

— We have to record the death of a member of the Massachusetts Medical Society who, although he was an active practitioner but for a limited portion of his life, will nevertheless be missed by a large circle of professional friends. Many of his companions whose names are well known to all of us have gone before him, but few have left behind them so pleasing a memory of the well-bred gentleman and genial friend as Dr. Charles Mifflin.

Dr. Mifflin died at his residence in this city on Thursday last. Born in Philadelphia in 1805, he was reared in a school of medicine justly celebrated

for the talent of its teachers, the University of Pennsylvania. Remaining for some time after graduating in his native city, his services were soon called into requisition by the approach of cholera, during which epidemic he saw much active service. Later, he made a voyage to Russia as surgeon to a government vessel. Since his marriage he has resided in Boston, and although a natural reserve and diffidence prompted him to refrain from the practice of his profession among strangers and with new professional colleagues, circumstances placed this wish beyond his control, and for a long series of years the summer residents of Nahant enjoyed the privilege of his professional care. Indeed, he may be said to have been the pioneer in a custom which is rapidly becoming more and more general among Boston physicians. His cheerful, genial manners made him always welcome, whether he came as friend or physician. His name is well known to the country from its connection with Revolutionary deeds. His quiet life, unselfish disposition, and warm heart will long be remembered by many a friend who mourns his loss.

— The employment of bromide of potassium in cases of epistaxis, uterine hæmorrhage, and coryza is recommended by Dr. Geneuil in *L'Union Médicale* of November 4, 1875. He reports the case of a man in whom violent epistaxis had continued for six hours uncontrolled by styptics, when finally a saturated solution containing six grammes of the bromide of potassium was injected into the nose by means of a glass syringe; the hæmorrhage was promptly arrested. Another case of a woman afflicted in the same way was speedily relieved by an injection of the same remedy twice. It is recommended that the bromide should also be given internally to prevent a recurrence of the hæmorrhage. The power of promptly arresting the epistaxis is not due to the coldness of the solution of the salt, but to the contraction brought about in the blood-vessels, and the consequent diminution of the flow of blood to the head. In cases of epistaxis, if the first injection should fail to accomplish its purpose, three or four injections may be given in succession. For uterine hæmorrhages of moderate intensity bromide of potassium given internally, and associated with the *pulvis ferri* in cases of anæmia, is recommended. The writer in his own person tested the value of the bromide in coryza. Two injections of a saturated solution given with half an hour's interval brought rapid relief, and six hours later effected a permanent cure. The application is rather painful for a little time, but a sensation of relief soon follows.

— A paper on oral organisms, by J. H. McQuillen, M. D., D. D. S., is published in the *Dental Cosmos* of November, 1875. The prominent part assigned by some observers to oral parasites in the production of decay of the teeth, and the equally emphatic denial by others that they have anything to do in the matter, makes the investigation of their nature and action of much importance. In the mouth of man several species of organisms or parasites find a habitat. The writer thinks some of them are animal, and the vegetal character of others is beyond dispute. With the exception of the *protoecoccus dentalis*, or green fungus, — which seems to be very destructive to the teeth of children, — Dr. McQuillen has failed to observe anything in these organisms which he could regard as conclusive evidence that they exert a destructive influence on the teeth. They are found in great numbers in the mouths of those whose teeth are

perfectly sound. Examination with instruments of high magnifying powers has failed to find in the human mouth those animal organisms which are described by some authorities as being armed with formidable apparatus for boring into the enamel and dentine, and as being thus enabled to destroy the structure of the teeth. Probably the destruction effected by the various borers in stone and wood has led to the belief that there were similar organisms found in the mouth, which destroyed the teeth; but with the exception of a writer who presented a paper to the French Institute many years ago, and another who published some observations a short time subsequently in this country, both of whom maintained that they had seen the apparatus referred to, no microscopist of any prominence has been able to find these parasites. It is therefore reasonable to infer that these writers have drawn upon their imaginations for their facts.

— A paper on rectified spirit (*spiritus frumenti rectificatus*) by A. W. Miller, M. D., Ph. D., is published in the *American Journal of Pharmacy* for November, 1875. The writer thinks that pure rectified spirit possesses merits and advantages which heretofore have not been properly appreciated by physicians. "French spirit," "sweet liquor," and "rectified spirits" are terms used by the liquor trade to designate pure rectified whisky freed from fusel-oils, coloring matter, and other impurities. It is obtained by percolating the ordinary raw corn whisky through fresh charcoal. It usually contains fifty per cent. of absolute alcohol by volume. It is the basis used by the compounders of fancy liquors for their cordials, etc. All the various fusel-oils in a concentrated form have peculiarly penetrating and oppressive odors, but it is on these in various proportions and admixture that the distinctive flavor of different liquors depends. It is by no means certain that the medicinal virtue of spirit is enhanced in the smallest degree by the costly flavors which characterize the choicest cognac, Jamaica rum, or Bourbon. In the plain, rectified spirit, however, we possess a liquor of almost absolute purity, which deserves to be regarded as the type of a simple arterial stimulant. It can be obtained everywhere with facility, of standard and uniform strength, and at a fraction of the price of the fancy flavored liquors. The conclusions are the following: Rectified spirit is almost always strictly pure, while the more expensive liquors invariably contain fusel-oils, and frequently other impurities. The market price of rectified spirit is at present from \$1.25 to \$1.50 per gallon, that of the fancy flavored liquors from \$2.50 to \$12.00. While the taste and odor of rectified spirit is not so tempting as that of the choice cabinet liquors, it is entirely free from the disgusting taste and smell of ordinary diluted alcohol. It has not yet been established that the more expensive liquors are in any way superior to rectified spirit, or that their physiological action presents tangible points of difference.

LETTER FROM PHILADELPHIA.

MESSRS. EDITORS, — The cost of the new pavilion wards attached to Wills' Hospital was \$5500 each, and not for both, as I stated in my last; I derived my information, however, from a source which I thought reliable. Even at

this cost the wards were, in fact, less than half as expensive as the Presbyterian Hospital pavilions. The latter, I am told, give some annoyance in shape of cold floors, because of the cold sub-space, which in case of the new Wills' Hospital wards is warmed in winter by a suitable arrangement of heat conductors.

I cannot forbear calling your attention to editorials in late numbers of the *Medical Times and Gazette*, which were elicited by certain certificates of lunacy perpetrated by English physicians. British medical journals never let slip an opportunity of sharpening their wits at the expense of American physicians.

The American pen falters under the effect of the disclosures to which I refer. The milk and water diet of the unfortunates of Dotheboy's Hall is not the only English mixture which deserves Squeers's encomium, for certainly "Here's richness" also. Under the head of Facts indicating Insanity, one sympathetic physician writes of a female lunatic: "She has a desponding expression of countenance interspersed with moans." The editor, in commenting upon this naïve and touching statement, says, "It would be difficult to say whether such a condition of countenance were decidedly indicative of insanity, but there can be no doubt that such a face submitted to instantaneous photography would be of great artistic interest." Under the same head, another physician states that the delusion of his patient was in reference to the birth of her child, which he lucidly proves by adding, "She was not confined, but it was found by a neighbor in the dust-hole, who brought it to her. She did not know of its birth." A third anxiously calls attention to "a fact personally observed by the certifier: she frequently passes her digestions (!) in bed, which state of mind has been gradually increasing upon her for two months." Another doctor, evidently one not profoundly versed in the vagaries of the female mind, records as evidence of insanity in his patient that "she had undecided notions about some man in Scotland." And, finally, for the ordinary mind should not wrestle too long with intellects of such vigor, a physician (whose mental power must be something ponderous), among other evidences of lunacy in a woman, unblushingly reports that "she presents a general appearance of nudity" (*sic*). You will observe a charming simplicity in these statements, and wonder how it is with the bones of Lindley Murray.

A correspondent of a Philadelphia paper communicates information concerning the health and longevity of the Jews, which is of great interest. He had addressed to all the prominent Jews of the United States the question, "Do the Jews ever have consumption?" From all sides he received the reply, "The disease is very rare among them." He also states that during an extensive practice he never met with phthisis in a Jew. Without strictly answering the question as to the reason of this comparative immunity, this writer quotes remarkable facts touching the longevity of Jews, from tables of vital statistics drawn from observations in great centres of civilization, England, France, Germany, etc. Some of these facts are the following: "In the first five years of life out of one hundred Jewish children, twelve die; of one hundred Christian children, twenty-four die. Thirty-eight per cent. of Christians reach the age of fifty; fifty-four per cent. of Jews attain the same age. Out of one hundred Christians

thirteen reach seventy years of age; out of one hundred Jews, twenty-seven reach a similar age. One quarter of all Christians live only six years and eleven months; one quarter of all Jews live twenty-eight years and three months." In explanation of these facts, Dr. Neufville says, "There are no proletaries among the Jews, while one tenth of Christians live on charity," and he directs attention to the striking difference between the longevity of Christian and Jewish merchants. Among one hundred merchants, one half the Christians die before the age of fifty-seven, while one half the Jews live to be sixty-seven." The relatively greater longevity, tenacity of life, and freedom from disease among the Jews may be due, it is thought, to hygienic, sanitary, and dietetic requirements of their religion. At any rate a careful investigation of the above facts might prove of great use in the management of the unhealthy and consumptive.

In *The Lancet* for July 17th, which has but recently fallen under my notice, I find an article on Tapping and Draining the Pleura, by Dr. Berkeley Hill. In the course of this paper Dr. Hill makes some remarkable statements concerning the comparative value and safety of ether and chloroform in the operation of paracentesis. He first mentions the strong opposition to the use of anæsthetics in this operation, which has been advanced by Dr. Bowditch and others, and quotes the five cases communicated by Dr. Bowditch to Dr. Clifford Allbutt, of Leeds, in which ether was administered. Two of these patients died shortly after the operation; a third escaped death only through most energetic means, including tracheotomy, and ether was abandoned in the other two cases before the operation was completed. Dr. Hill then suggests that such examples indicate that anæsthetics should not be used for simple tapping, but adds that in the University Hospital, of which he is surgeon, when an incision has to be made through the thick muscles of the back and a drainage tube introduced, chloroform is always administered. In eight cases of his own Dr. Hill used chloroform, "without observing unusual symptoms," and he mentions similar success at the hands of brother surgeons. "Hence," says Dr. Hill, "though anæsthetics are not to be lightly resorted to, they may be safely employed when required. It is worth notice also," he concludes, "that ether was the source of the mischief in the fatal cases, and that chloroform was well borne in our own cases." Here is a new phase in the English partisanship for chloroform, and a tone of triumph in this exultation over the superior(?) safety of chloroform, to which we are unaccustomed even from Englishmen. Yet it strikes us that this matter is somewhat murky. As presented, the results have a strangely unfamiliar look. The cart seems to be drawing the horse. Dr. Bowditch loses two patients and barely saves a third, because he used ether. Dr. Hill chloroforms eight patients, "some of them bad cases;" other surgeons anæsthetize other patients by the same means and the results are favorable! More than this. Dr. Hill sneers at ether as being mischievous and extols chloroform as a safe anæsthetic! This is a most uncommon state of affairs, one which many of us would gladly see elucidated. It is not, perhaps, so much a matter of wonder that English medical men are enemies of ether, that is to say, if they can procure no better specimens of the article than I was able to secure for a confinement case which I attended in London about

three years ago. In the course of five hours I administered twenty ounces of the best ether I could obtain, and not for one moment was my patient fully insensible. It may be that such ether as Squibb manufactures is not to be found in England. Yet Drs. Jeffries and Fifield, and others, seem to have encountered no such difficulty in England as that which occurred to me; hence the quality of English ether has no special bearing upon the mystery which surrounds the statements of Dr. Hill.

Dr. Benjamin Lee, of Philadelphia, read before the late Baltimore Sanitary Convention a paper upon the cost of the small-pox epidemic which raged with such violence in this city during the winter of 1871-72. The object of the paper was to show that the epidemic was not properly managed, and that a generous outlay for the prevention of disease is both important and economical. The essay included the following remarkable estimates of the cost of the late epidemic: "Expenses incurred in the care of the sick, \$203,879; loss by sickness (time), \$1,072,065; loss by disability (time and expense), \$10,000,000; loss by death, \$5,013,000; expense of premature burials, \$74,420. Total, \$16,363,364."

X.

WEEKLY BULLETIN OF PREVALENT DISEASES.

THE following is a bulletin of the diseases prevalent in Massachusetts during the week ending December 11, 1875, compiled under the authority of the State Board of Health from the returns of physicians representing all sections of the State:—

The summary for each section is as follows:—

Berkshire: Bronchitis, influenza.

Valley: Bronchitis, pneumonia, rheumatism, diphtheria, influenza, typhoid fever. Diphtheria in Springfield and Holyoke.

Midland: Influenza, pneumonia, bronchitis, diphtheria, rheumatism. Royalston reports "diphtheria very severe."

Northeastern: Bronchitis, rheumatism, influenza, pneumonia. Not much sickness.

Metropolitan: Bronchitis, scarlatina, pneumonia, influenza, rheumatism, diphtheria. More scarlatina, and much less diphtheria, reported.

Southeastern: Bronchitis, influenza. A comparatively small amount of sickness.

For the State at large, the noteworthy features of the week's returns are the increase in bronchitis and pneumonia, and the subsidence of typhoid fever and diarrhoea nearly to the minimum. Other diseases remain as at last report. The order of relative prevalence is as follows: Bronchitis, influenza, pneumonia, rheumatism, diphtheria, scarlatina, typhoid fever, croup, measles, whooping-cough. Diphtheria is most prevalent in the middle sections of the State, scarlatina is most active in Boston.

F. W. DRAPER, M. D., Registrar.

COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING DEC. 4, 1875.

	Estimated Population.	Total Mortality for the Week.	Annual Death-Rate per 1000 during Week.
New York	1,060,000	484	24
Philadelphia	800,000	297	19
Brooklyn	500,000		
Chicago	400,000	102	14
Boston	342,000	151	23
Cincinnati	260,000		
Providence	100,700	28	14
Worcester	50,000	18	19
Lowell	50,000	14	15
Cambridge	48,000	19	21
Fall River	45,000	16	18
Lawrence	35,000	11	16
Lynn	33,000	8	13
Springfield	31,000	6	10
Salem	26,000	9	18

Normal Death-Rate, 17 per 1000.

SUFFOLK DISTRICT MEDICAL SOCIETY. — The next regular meeting will be held at the hall in Temple Place on Saturday, December 18th, at 7.30 p. m. Dr. S. G. Webber will exhibit a new battery for electrolysis. Dr. J. R. Chadwick will present a specimen of sarcoma of the uterus, and, by Dr. F. A. Harris, a specimen of fibroid tumor of the uterus complicated by sarcoma. Dr. C. F. Folsom will read a paper on Limited Responsibility, which will be followed by a discussion. Members of other State and district societies are cordially invited.

THE BOSTON SOCIETY FOR MEDICAL OBSERVATION. — The next regular meeting will be held December 20th. Dr. O. W. Doe will read a paper on the Cold-Water Treatment of Typhoid Fever.

BOOKS AND PAMPHLETS RECEIVED. — Lectures and Essays on the Science and Practice of Surgery. By Robert McDonnell, M. D., F. R. S. Part II. The Physiology and Pathology of the Spinal Cord. Dublin: Fanner & Co. 1875.

Foot Notes on Walking as a Fine Art. By Alfred Barron, "Q." Wallingford, Conn. 1875. (From A. Williams & Co.)

The Illustrated Annual Register of Rural Affairs for 1876. Albany, N. Y.

Discours prononcé à l'Académie de Médecine dans la Discussion sur le Cholera (Séance du 13 Juillet, 1875). Par M. Bonnafont. Paris. 1875.

A System of Midwifery, including the Diseases of Pregnancy and the Puerperal State. By William Leishman, M. D. Second American from the second and revised English edition. With Additions, by John S. Parry, M. D. Philadelphia: Henry C. Lea. 1875. (For sale by A. Williams & Co.)

Lectures on Bright's Disease, delivered at the Royal Infirmary of Glasgow. By D. Campbell Black, M. D., L. R. C. S. Philadelphia: Lindsay and Blakiston. 1875. (For sale by A. Williams & Co.)